

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-8 (Canceled).

Claim 9 (Previously Presented): A method for cooking pulp, which comprises the step of:

a) pulping a lignocellulose material with an alkaline cooking liquor containing polysulfides in the presence of a quinone-hydroquinone compound, wherein the oxidation-reduction potential of the quinone-hydroquinone compound, in the form present during the cooking, is from about 0.12-0.25 V to the standard hydrogen electrode potential,

wherein the potential is a value calculated as a standard oxidation-reduction potential (Ea) with a hydrogen ion activity of 1, and

wherein the alkaline cooking liquor comprises polysulfide sulfur at a concentration of at least about 8 g/L, calculated as sulfur, and Na₂S-state sulfur at a concentration of at least about 10 g/l, calculated as Na₂O.

Claim 10 (Previously Presented): The method of Claim 9, wherein the oxidation-reduction potential is from about 0.14-0.20 V to the standard hydrogen electrode potential.

Claims 11-12 (Canceled).

Claim 13 (Previously Presented): The method of Claim 9, wherein the alkaline cooking liquor is produced by electrolysis of white liquor or green liquor.

Claim 14 (Canceled).

Claim 15 (Previously Presented): The method of Claim 9, wherein the alkaline cooking liquor during the cooking contains from about 0.01-1.5 wt.% of the quinone-hydroquinone compound based on bone-dry chip.

Claim 16 (Previously Presented): The method of Claim 9, wherein a liquid to wood ratio of the cooking liquor during the cooking is from about 1.5-5.0 l/kg based on bone-dry chip.

Claim 17 (Previously Presented): The method of Claim 9, wherein the quinone-hydroquinone compound comprises an alkyl anthraquinone, a quinone or hydroquinone compound.

Claim 18 (Previously Presented): The method of Claim 17, wherein the alkyl anthraquinone comprises 1-ethyl-9,10-anthraquinone or 2-methyl-9,10-anthraquinone.

Claim 19 (Previously Presented): The method of Claim 17, wherein the quinone compound comprises 1-hydroxy-9,10-anthraquinone, 2-(9,10-anthraquinoyl)-1-ethanesulfonic acid, 9,10-anthraquinone-2-sulfonic acid, 9,10-anthraquinone-2-carboxylic acid, 9,10-anthraquinone-2,7-disulfonic acid, benz (α) anthracene-7,12-dione, 1,4,4a,9a-tetrahydro-9,10-anthraquinone, 1,4-dihydro-9,10-anthraquinone or the disodium salt of 1,4-dihydro-9,10-dihydroxyanthracene.

Claim 20 (Previously Presented): The method of Claim 9, wherein the lignocellulose material comprises soft wood.

Claim 21 (Previously Presented): The method of Claim 9, wherein the lignocellulose material comprises hard wood.

Claim 22 (Previously Presented): The method of Claim 9, wherein the alkaline cooking liquor is prepared by electrolytically oxidizing an alkaline solution comprising sulfide ions.

Claim 23 (Previously Presented): An alkaline pulp cooking liquor composition, comprising:

a) polysulfide sulfur, at a concentration of at least about 8 g/L, calculated as sulfur;
and

b) one or more quinone-hydroquinone compounds having, in a form present during pulp cooking, an oxidation-reduction potential of about 0.12-0.25V to the standard hydrogen potential;

wherein the potential is calculated as a standard oxidation-reduction potential (E_a) with a hydrogen ion activity of 1, and

c) Na_2S -state sulfur, at a concentration of at least about 10 g/l, calculated as Na_2O .

Claim 24 (Previously Presented): The composition of Claim 23, wherein the oxidation-reduction potential is from about 0.14-0.20 V to the standard hydrogen electrode potential.

Claims 25-26 (Canceled).

Claim 27 (Previously Presented): The composition of Claim 23, wherein the alkaline cooking liquor is produced by electrolysis of white liquor or green liquor.

Claim 28 (Canceled).

Claim 29 (Previously Presented): The composition of Claim 23, wherein the alkaline cooking liquor during the cooking contains from about 0.01-1.5 wt.% of the quinone-hydroquinone compound based on bone-dry chip.

Claim 30 (Previously Presented): The composition of Claim 23, wherein a liquid to wood ratio of the cooking liquor during the cooking is from about 1.5-5.0 l/kg based on bone-dry chip.

Claim 31 (Previously Presented): The composition of Claim 23, wherein the quinone-hydroquinone compound comprises an alkyl anthraquinone, a quinone or hydroquinone compound.

Claim 32 (Previously Presented): The composition of Claim 23, wherein the alkyl anthraquinone comprises 1-ethyl-9,10-anthraquinone or 2-methyl-9,10-anthraquinone.

Claim 33 (Previously Presented): The composition of Claim 23, wherein the quinone compound comprises 1-hydroxy-9,10-anthraquinone, 2-(9,10-anthraquinoyl)-1-ethanesulfonic acid, 9,10-anthraquinone-2-sulfonic acid, 9,10-anthraquinone-2-carboxylic acid, 9,10-anthraquinone-2,7-disulfonic acid, benz (α) anthracene-7,12-dione, 1,4,4a,9a-

tetrahydro-9,10-anthraquinone, 1,4-dihydro-9,10-anthraquinone or disodium salt of 1,4-dihydro-9,10-dihydroxyanthracene.

Claim 34 (Previously Presented): The composition of Claim 23, wherein the alkaline cooking liquor is prepared by electrolytically oxidizing an alkaline solution comprising sulfide ions.

Claim 35 (New): A method for cooking pulp, which comprises the step of:

a) pulping a lignocellulose material with an alkaline cooking liquor containing polysulfides in the presence of a quinone-hydroquinone compound, wherein the oxidation-reduction potential of the quinone-hydroquinone compound, in the form present during the cooking, is from about 0.12-0.25 V to the standard hydrogen electrode potential,

wherein the potential is a value calculated as a standard oxidation-reduction potential (Ea) with a hydrogen ion activity of 1, and

wherein the alkaline cooking liquor comprises polysulfide sulfur at a concentration of at least about 8 g/L, calculated as sulfur, and Na₂S-state sulfur at a concentration of at least about 10 g/l, calculated as Na₂O,

wherein the alkaline cooking liquor is produced by electrolysis of white liquor or green liquor.

Claim 36 (New): The method of Claim 35, wherein the oxidation-reduction potential is from about 0.14-0.20 V to the standard hydrogen electrode potential.

Claim 37 (New): The method of Claim 35, wherein the alkaline cooking liquor during the cooking contains from about 0.01-1.5 wt.% of the quinone-hydroquinone compound based on bone-dry chip.

Claim 38 (New): The method of Claim 35, wherein a liquid to wood ratio of the cooking liquor during the cooking is from about 1.5-5.0 l/kg based on bone-dry chip.

Claim 39 (New): The method of Claim 35, wherein the quinone-hydroquinone compound comprises an alkyl anthraquinone, a quinone or hydroquinone compound.

Claim 40 (New): The method of Claim 39, wherein the alkyl anthraquinone comprises 1-ethyl-9,10-anthraquinone or 2-methyl-9,10-anthraquinone.

Claim 41 (New): The method of Claim 39, wherein the quinone compound comprises 1-hydroxy-9,10-anthraquinone, 2-(9,10-anthraquinoyl)-1-ethanesulfonic acid, 9,10-anthraquinone-2-sulfonic acid, 9,10-anthraquinone-2-carboxylic acid, 9,10-anthraquinone-2,7-disulfonic acid, benz (α) anthracene-7,12-dione, 1,4,4a,9a-tetrahydro-9,10-anthraquinone, 1,4-dihydro-9,10-anthraquinone or the disodium salt of 1,4-dihydro-9,10-dihydroxyanthracene.

Claim 42 (New): The method of Claim 35, wherein the lignocellulose material comprises soft wood.

Claim 43 (New): The method of Claim 35, wherein the lignocellulose material comprises hard wood.

Claim 44 (New): The method of Claim 35, wherein the alkaline cooking liquor is prepared by electrolytically oxidizing an alkaline solution comprising sulfide ions.

Claim 45 (New): An alkaline pulp cooking liquor composition produced by electrolysis of white liquor or green liquor, comprising:

a) polysulfide sulfur, at a concentration of at least about 8 g/L, calculated as sulfur;

and

b) one or more quinone-hydroquinone compounds having, in a form present during pulp cooking, an oxidation-reduction potential of about 0.12-0.25V to the standard hydrogen potential;

wherein the potential is calculated as a standard oxidation-reduction potential (E_a) with a hydrogen ion activity of 1, and

c) Na_2S -state sulfur, at a concentration of at least about 10 g/l, calculated as Na_2O .

Claim 46 (New): The composition of Claim 45, wherein the oxidation-reduction potential is from about 0.14-0.20 V to the standard hydrogen electrode potential.

Claim 47 (New): The composition of Claim 45, wherein the alkaline cooking liquor during the cooking contains from about 0.01-1.5 wt.% of the quinone-hydroquinone compound based on bone-dry chip.

Claim 48 (New): The composition of Claim 45, wherein a liquid to wood ratio of the cooking liquor during the cooking is from about 1.5-5.0 l/kg based on bone-dry chip.

Claim 49 (New): The composition of Claim 45, wherein the quinone-hydroquinone compound comprises an alkyl anthraquinone, a quinone or hydroquinone compound.

Claim 50 (New): The composition of Claim 45, wherein the alkyl anthraquinone comprises 1-ethyl-9,10-anthraquinone or 2-methyl-9,10-anthraquinone.

Claim 51 (New): The composition of Claim 45, wherein the quinone compound comprises 1-hydroxy-9,10-anthraquinone, 2-(9,10-anthraquinoyl)-1-ethanesulfonic acid, 9,10-anthraquinone-2-sulfonic acid, 9,10-anthraquinone-2-carboxylic acid, 9,10-anthraquinone-2,7-disulfonic acid, benz (α) anthracene-7,12-dione, 1,4,4a,9a-tetrahydro-9,10-anthraquinone, 1,4-dihydro-9,10-anthraquinone or disodium salt of 1,4-dihydro-9,10-dihydroxyanthracene.

Claim 52 (New): The composition of Claim 45, wherein the alkaline cooking liquor is prepared by electrolytically oxidizing an alkaline solution comprising sulfide ions.

BASIS FOR THE AMENDMENT

Claims 9-10, 13, 15-24, 27 and 29-52 are active in the present application. Claims 1-8, 11-12, 14, 25-26 and 28 are canceled claims. Claims 35-52 are new claims. Support for the new claims is found in the original and previously presented claims. No new matter is added.